

## ABSTRACT OF THE DISCLOSURE

A bipolar transistor includes a Si single crystalline layer serving as a collector, a single crystalline Si/SiGeC layer and a polycrystalline Si/SiGeC layer which are formed on the Si single crystalline layer, an oxide film having an emitter opening portion, an emitter  
5 electrode, and an emitter layer. An intrinsic base layer is formed on the single crystalline Si/SiGeC layer, part of the single crystalline Si/SiGeC layer, the polycrystalline Si/SiGeC layer and the Co silicide layer together form an external base layer. The thickness of the emitter electrode is set so that boron ions implanted into the emitter electrode and diffused therein do not reach an emitter-base junction portion.